Tarun Garg, Pharmaceut Anal Acta 2013, 4:2
http://dx.doi.org/10.4172/2153-2435.S1.017

OMICS Group Conferences
Accelerating Scientific Discovery

3rd International Conference and Exhibition on
Pharmaceutics & Novel Drug Delivery Systems
April 08-10, 2013 Hilton Chicago/Northbrook, USA

Development, optimization & evaluation of porous chitosan scaffold formulation of Gliclazide for the treatment of Type-2 Diabetes mellitus

Tarun Garg
India

In order to achieve high bioactivity, low systemic side effects and prevention of high critical hypoglycaemic conditions of antidiabetic drugs in the treatment of diabetes mellitus, sustained and controlled delivery system is crucial. In this study, a three-dimensional (3-D) porous scaffold formulation was developed with the ability to release antidiabetic drugs in a controlled fashion. The gliclazide (GLZ), was successfully incorporated into prefabricated 3-D porous matrix chitosan scaffolds using a freeze-drying method. Porosity, swelling, water absorption and drug entrapment efficiency was increased after the addition of PEG 4000. The release kinetics of GLZ from two different (2% and 3%) chitosan scaffold formulations investigated showed sustained and controlled delivery of GLZ. The GLZ release is strongly dependent upon the physical and chemical properties of the chitosan and PEG 4000. Scaffold with 3% chitosan discharge GLZ rapidly with a high initial burst release while scaffold with 2% chitosan can extend the release of GLZ to longer than 2 weeks with a low initial burst release. Compared to chitosan alone, the PEG 4000 incorporated on a 3-D scaffold had significantly reduced the initial burst release. In-vivo antidiabetic tests of chitosan (2%)-PEG (1.5%) scaffold formulation demonstrated its ability to reduce blood sugar level for a prolonged duration (7 days). From this study, we concluded that, versatile carrier system i.e. porous scaffold formulation is effective for the delivery of GLZ for diabetes mellitus and maintain the concentration levels over a prolonged period of time, when compared against the free drug.

tarun.garg9@gmail.com